

XXXI. NWA2046

Basaltic Shergottite

63 grams



Figure XXXI-1: Sawn surface of NWA2046 (photo from Irving et al. 2004). Sample is 3 cm across.

Introduction

Russell et al. (2004) report that a 63 gram complete and partially crusted stone was purchased in Morocco in 2003 by M. Farmer. The interior is fresh (figure XXXI-1).

Petrography

Irving et al. (2004) report the petrology of NWA2046. Olivine phenocrysts (2 mm) are euhedral to subhedral and found in clumps. Long prismatic pyroxenes (2 mm) have low-Ca cores (orthopyroxene?) are overgrown with pigeonite (figure XXXI-2). These phenocrysts are set in a fine-grained groundmass composed mainly of intergrown pigeonite and maskelynite. Irving et al. find that the pyroxene and olivine phenocrysts have preferred orientation (figure XXXI-4).

Minor phases include chromite, ilmenite, ulvöspinel, pyrrhotite, merrillite, chlorapatite, and fayalite. Olivine

also includes melt inclusions (described in Irving et al. 2004).

Mineralogy

Olivine: Olivine is zoned from Fo_{84-52} .

Pyroxene: Pyroxene cores are $\text{En}_{80}\text{Fs}_{18}\text{Wo}_{2.5}$. Zoning is shown in figure XXXI-3.

Plagioclase: Maskelynite is An_{75-62} .

Chemistry

None

Radiogenic age dating

None

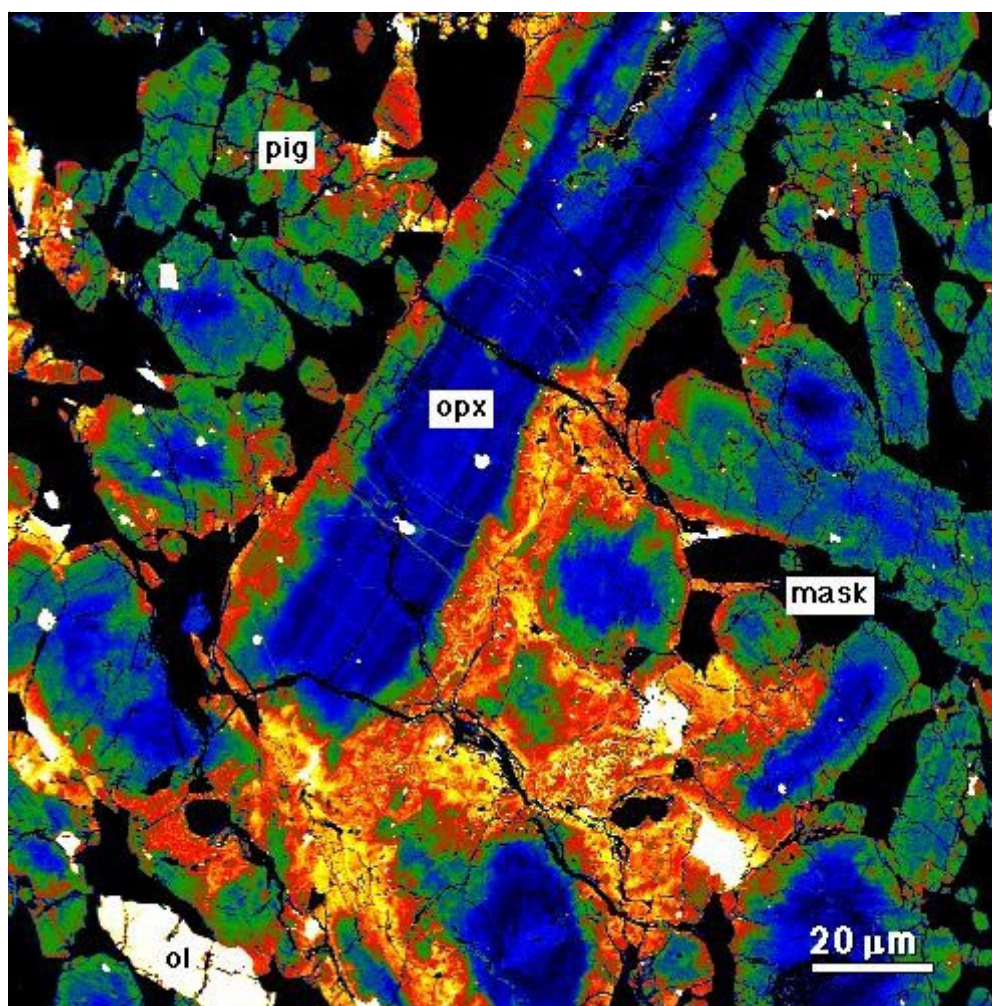


Figure XXXI-2: Element map (Fe?) from Tony Irving showing large, zoned orthopyroxene (this is figure 3 in Irving et al. 2004).

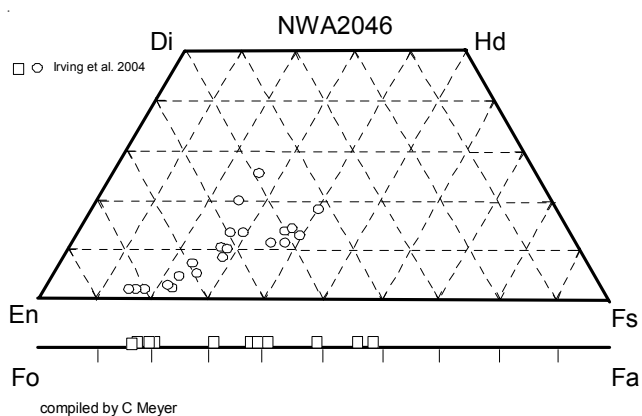


Figure XXXI-3: Pyroxene and olivine composition of NWA2046 (replotted from Irving et al. 2004).

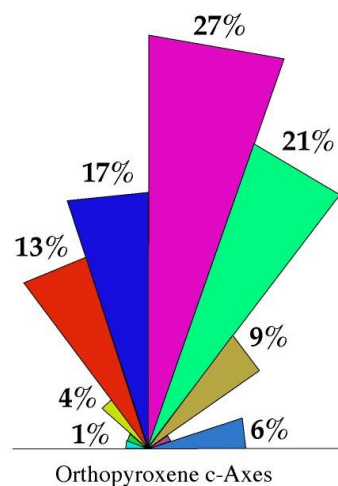


Figure XXXI-4: Rose diagram plot of the long axes orientations of 148 prismatic orthopyroxene phenocrysts in a thin section of NWA 2046, indicating that 87% of the orthopyroxene grains are preferentially oriented within $\pm 36^\circ$ in the same direction (in planer projection). Diagram from Theodore Bunch.